REMARKS

Overview

Claims 1-3, 9-12, 16-18, 20, 22-25, 30 and 31 are pending in this application. Claims 1, 9, 30 and 31 have been amended. The present response is an earnest effort to place all claims in proper form for immediate allowance. Reconsideration and passage to issuance is therefore respectfully requested.

Issues Under 35 U.S.C. § 112

Claims 30-31 have been rejected under 35 U.S.C. 112, second paragraph, for unclearly rendering how one can separate the resistors with the glass frit while failing to claim the glass frit. Applicant has amended claims 30-31 to include a glass frit. Thus, it is respectfully submitted that all matters raised under the § 112 rejection have been addressed and remedied.

Issues Under 35 U.S.C. § 102

Claims 30 and 31 have been rejected under 35 U.S.C. § 102(b) as being anticipated by JP 6283301. These rejections are respectfully traversed.

Amended independent claims 30 and 31 require that the first and second film resistors be mechanically bonded without the use of adhesives. JP '301 uses epoxy or thermosetting epoxy to create joined bodies (11, 12) in Figure 1c of Application Example 1 and (31, 32 and 36) in Figure 6c of Application Example 2. JP '301 states, "just as in Application Example 1, adhesive is used to join the three chip-type electronic parts (32), (31), (36) with each other (JP '301, Actual Translation, p. 8, numbered paragraph 13, *emphasis added*). JP '301 also states that it is preferred that the adhesive be an "epoxy resin or other thermosetting resin" and "applied to the contacting surface as a bonding adhesive" (JP '301, Actual Translation, p. 6, numbered paragraph 9). The language and figures in JP '301 also strongly denote the use of an adhesive to create the

"joined body" (14, 34) illustrated in Figures 1b and 6b. In particular, JP '301 only uses the term "joined body" after the "epoxy resin or other thermosetting resin [is] applied to the contact surfaces as a bonding adhesive" (JP '301, Actual Translation, p. 6, numbered paragraph 9). Moreover, Figures 1 and 6 show the chips as separate pieces in 1a and 6a, becoming a "joined body" by operation of the adhesive in 1b and 6b and lastly, fitted with lead frames in 1c and 6c.

Amended claims 30 and 31 further require an inert encapsulant. JP '301 does not disclose an inert encapsulant. At best, JP '301 discloses a "high-dielectric resistance film (not shown in the figure)" that is "made of alumina" (JP '301, Actual Translation, p. 6, numbered paragraph 8). The high-dielectric resistance element in JP '301 is not the equivalent of Applicant's Figure 1, Element 16 inert encapsulant; but rather, the equivalent of Applicant's Figure 1, Element 12 high-dielectric resistance element made of Ruthenium Oxide. Additionally, the Examiner cites paragraphs 8 and 9 as disclosing "end caps 11b and 11c, barriers 13, and encapsulant therebetween as the rectangular cover implied since pars. 8-9 disclose that the film part of the resistor is not depicted; i.e., it is within or under the rectangular encapsulant depicted". JP '301 does not refer to an encapsulant, nor does it state that the encapsulant is "not shown in the figure". The Examiner suggests that the encapsulant is implied, but in doing so ignores the fact that there is no mention of an encapsulant. Instead, the Examiner applies hindsight reconstruction thereby eviscerating that which makes the invention patentable or using an inert encapsulant. The Examiner further states, "the covering part depicted must be a dielectric covering thereof, or inert encapsulant, as implied and depicted since any other type of material other than a dielectric or inert encapsulant would destroy the function of the resistor". In this regard, the teachings in JP '301 are contrary to the Examiner's remarks. First, the encapsulant is not depicted. Second, the encapsulant cannot be implied. Lastly, the encapsulant does not need

to be necessarily inert. Applicant's encapsulant must necessarily be inert to reduce the potential for resistive heating caused from corrosion thereby increasing power dissipation while maintaining electrical stability. JP '301 is not directed to increasing power dissipation while maintaining electrical stability. This is evident by the fact that JP '301 uses a non-inert adhesive to join the chip-type electronic parts.

Furthermore, claims 30 and 31 require that the barriers provide long term mechanical stability in a manner resistant to resistive heating. JP ' 301 does not ensure such stability if power dissipation is increased. In particular, JP '301 uses a copper lead frame with its entire surface plated with solder (JP '301, Actual Translation, p. 6, numbered paragraph 9). This solder plating is integral to maintaining long term mechanical stability and preventing resistive heating because it ensures that the terminal electrodes remain electrically connected to the lead frames (JP '301, Actual Translation, p. 7, numbered paragraph 12). Requiring increased power dissipation often creates additional heat, thus raising the temperature. Due to this resistive heating, the temperature reaches the softening point or even melting point of the solder, making the power chip resistor less efficient. With increased resistive heating the degradation of the power chip is accelerated until it ultimately fails. Thus, JP '301 would not be mechanically stable or resistant to resistive heating over the long term.

Lastly, amended claims 30 and 31 require that the first and second barriers electrically connect and mechanically bond the end caps of the first and second film resistors. In JP '301, it is the solder which electrically connects and mechanically bonds the lead frames to the terminal electrodes (JP '301, Actual Translation, p. 7, numbered paragraph 12).

Accordingly, claims 30 and 31 distinguishes over JP '301 so as to be allowable, since JP '301 fails to disclose four of the limitations required by claims 30 and 31.

Issues Under 35 U.S.C. § 103

Claims 1, 30 and 31 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 6283301 in view of Chiang 99/53505. These rejections are respectfully traversed.

It is submitted that JP '301 is deficient by not disclosing the following limitations:

a) "mechanically bonding the film resistors without adhesive";

b) "an inert encapsulate";

c) "long-term mechanical stability and resistance to resistive heating"; or

d) first and second barriers "electrically connecting" and "mechanically bonding" the end caps of the first and second film resistors.

With respect to Chiang, Chiang does not remedy these deficiencies. Chiang does not disclose mechanically bonding film resistors without adhesive. Chiang discloses a composite circuit protection device comprised of stacked laminar circuit protection devices, wherein "first laminar circuit protection device is attached via insulating member 53 to second circuit protection device 12" (Chiang, p. 14, lines 2-4). Chiang teaches that the insulating member "can comprise an electrically nonconductive adhesive, e.g. an epoxy" (Chiang, p. 10, lines 21-22). Claims 30 and 31 require that the first and second barriers be used to attach the film resistors; in fact, JP '301 and Chiang teach directly away from using the encapsulant, insulating member, or an encapsulant that is an epoxy to attach the film resistors.

Chiang does not disclose an inert encapsulant. In fact, Chiang teaches that the insulating member "can comprise an electrically nonconductive adhesive, e.g. an epoxy" (Chiang, p. 10, lines 21-22). A nonconductive adhesive such as epoxy is not inert.

Chiang also does not disclose a power chip resistor resistant to resistive heating. Chiang is not a power chip resistor and additionally, uses solder to connect the interfacial joints (Chiang,

p. 11, lines 30-31). Thus, if the temperature reaches the softening point or even melting point of the solder, the power chip resistor becomes less efficient due to the resistive heating.

Chiang does not disclose first and second barriers "electrically connecting" and "mechanically bonding" the end caps of the first and second film resistors. Chiang uses solder to connect the interfacial joints (Chiang, p. 11, lines 30-31).

Therefore, as neither JP '301 or Chiang alone or in combination disclose the limitations required by claims 1, 30 and 31, the rejections to claims 1, 30 and 31 should be withdrawn.

With respect to amended independent claim 1 there is an independent basis for patentability. Claim 1 requires that the first and second film resistors be mechanically bonded "without adhesive or solder". Neither JP '301 or Chiang disclose bonding without using solder. JP '301 uses solder to electrically connect and mechanically bond the lead frames to the terminal electrodes (JP '301, Actual Translation, p. 7, numbered paragraph 12). Additionally, Chiang uses solder to connect the interfacial joints (Chiang, p. 11, lines 30-31). Therefore, claim 1 further distinguishes over the JP '301 and Chiang references.

Claims 2-3, 9-12, 16-18, 20, 22, 24-25 and 30 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 6283301 in view of Chiang 99/53505, further in view of Hashimoto. These rejections are respectfully reversed. Differences between JP '301 and Chiang have already been discussed. Therefore, these rejections should also be withdrawn. Hashimoto also does not remedy these deficiencies as Hashimoto is not directed towards a power chip resistor that provides the advantages of "long-term mechanical stability and resistance to resistive heating" of the power chip resistor. Furthermore, Hashimoto discloses nickel plating, but there is no motivation or suggestion to replace the copper lead frames of JP '301 with nickel. Moreover, the protective layer 94 used in Hashimoto is not specifically suited for a power chip resistor that

addresses the problems of long term stability and resistive heating. In particular, the epoxy system resin used in Hashimoto as a protective layer is not inert as required by applicant's claimed invention (Hashimoto, col. 14, lines 7-9).

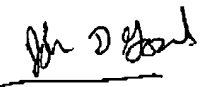
Claim 23 has been rejected under 35 U.S.C. § 103(a) as being unpatentable over JP 6283301 in view of Chiang 99/53505 and Hashimoto, further in view of Nakamura et al. These rejections are respectfully traversed. In particular, the deficiencies of JP '301, Chiang 99/53505 and Hashimoto have already been discussed. Nakamura does not remedy the deficiencies in JP '301 by disclosing end caps using silver palladium. Even if the end caps in Nakamura were used in JP '301, the structure would still be deficient and would not provide the advantages of "long-term mechanical stability and resistance to resistive heating" of the power chip resistor. Therefore, it is respectfully submitted that this rejection should also be withdrawn.

Conclusion

No fees or extensions of time are believed to be due in connection with this amendment; however, consider this a request for any extension inadvertently omitted, and charge any additional fees to Deposit Account No. 26-0084.

Reconsideration and allowance is respectfully requested.

Respectfully submitted,



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